

## ATTACHMENT B

- I. CEQA process for SR-73
- II. August 26, 1993, memo from James Konopka of Caltrans Environmental Planning Branch regarding the Use of CSF units for SR-73.
- III. Minutes of October 28, 1993, meeting between California Corridor Constructors, and the Santa Ana Regional Water Quality Control Board regarding the use of CSF units on SR-73.



## **I. CEQA Process for SR-73**

The Final Environmental Impact Statement (EIS) for the SR-73 project contained an adopted water quality mitigation measure No. 3-9 (Attachment 1) which stated:

“Prior to final design, the TCA shall prepare a detailed Runoff Management Plan (RMP). The plan shall address the provision and location of facilities to route and detain corridor runoff for the purpose of maintaining runoff velocity at or below existing rates and preventing Corridor pollutants from reaching improved and unimproved downstream drainages.”

Measure 3-9 contained several key components including:

- a. Establishment of baseline water quality conditions.
- b. Placement of detention settlement basins, drainage channels, and runoff metering devices.
- c. Use of a landscape palette that facilitates pollutant uptake and removal.
- d. Regular testing of runoff water quality.
- e. The use of Best Management Practices (BMPs) that ensure compliance with relevant water quality standards.
- f. Maintenance procedures to guarantee continued performance of RMP elements.

In fulfillment of condition (a) of water quality Mitigation Measure 3-9 a study to determine baseline water quality conditions along the SR-73 corridor watersheds was conducted. Water quality sampling was performed at seven locations during January and February of 1993. The results of this sampling found indicated very high pre-project levels of a number of water quality contaminants prior to mitigation (bacteria, TDS, Zinc, nitrate, phosphate, COD).<sup>1</sup> Anticipated incremental pollutant loading from SR-73 were calculated, and it was determined that prior to mitigation COD levels would increase by 142,288 pounds per year, TDS levels by 676 pounds per year, lead levels by 631 pounds per year, TKN levels by 3120 pounds per year and zinc levels by 436 pounds per year.

The initial RMP was completed in July 1993, and proposed the use of infiltration basins as the primary treatment BMP for storm water runoff generated from SR-73. The use of infiltration basins would have provided high levels of particulate and soluble pollutant removal. The RMP concluded that although there appeared to be sufficient infiltration acreage overall along the SR-73, there was a deficit of suitable infiltration areas in several areas.

After completion of the initial RMP, Caltrans' Environmental Planning Division suggested the use of Compost Stormwater Filters (CSF units) to California Corridor

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<sup>1</sup> Source : TCA, Final EIR for State Route 73, April 1992 (prepared By LSA Associates)



Constructors (CCC) as an alternate to the infiltration basin concept. Caltrans suggested that this type of BMP would dramatically reduce the amount of acreage needed for the BMPs, and would significantly reduce the maintenance costs of BMPs along SR-73, as opposed to the infiltration concept (see attachment 2).

CCC reviewed Caltrans' suggestion and decided it would like to utilize the CSF units as the primary treatment BMP for SR-73. On October 28, 1993, CCC met with staff from the Santa Ana Regional Water Quality Control Board (SARWQCB) to discuss the use of CSFs on the SR-73. The SARWQCB stated that they would allow the use of these filters, and that they would like the RMP to be amended to reflect this (see attachment 3).

TCA designed 40 CSFs and installation was completed by October 1996.



## M e m o r a n d u m

To: Roger Kao Date: August 26, 1993

From: James Konopka File: 12-ORA-SJHTC  
Environmental Planning Branch C 12830-102540

Subject: COMPOST STORM WATER FILTER (CSF)

I'm writing to inform you of some new information I recently received regarding the treatment of storm water runoff from highway facilities. This information could prove very useful to the planning of storm water treatment facilities along the SJHTC.

The plan involves the use of compost material for pollution control. The compost storm water filter system was developed by William C. Stewart Ph.d, a project scientist with W & H Pacific, a Land Use Planning and Engineering Consulting firm. Stewart has determined that compost is effective in treating pollutants because it is rich in humic compounds. Humic compounds are insoluble, long chain, biopolymers that are very stable to bacterial attack. Chemically active humic compounds contain numerous ion exchange and absorption binding sites that allow the compost to act as a non-blocking filter. These attributes make a compost system ideal for treating storm water pollutants such as heavy metals, oils, grease, pesticides and organic nutrients.

The current methods being planned for the SJHTC to treat the storm water runoff include grassy swales and detention basins. A major problem with these designs is in the amount of land they consume with detention basins covering several acres. The compost stormwater treatment system has the significant advantage of requiring only three to five percent of the same amount of land area of a comparably designed detention basin.

The costs of maintenance for this design is also significantly reduced as compared to detention basins. The compost cells with the heaviest loading are replaced annually and the other cells can be replaced at three to four year intervals. Once removed the non-hazardous compost can be used safely in erosion control projects and as a cover material in landfills. Because of its design beer cans, oil containers, cigarette butts and other floatables are captured in the cells of the facility. In addition, if a serious accident resulting in a fuel spill were to occur on the roadway served by the treatment facility the tainted compost would be simply, removed, disposed of properly and replaced with fresh material. If the same thing happened with a conventional swale design then all the vegetation and top soil would need to be removed and disposed of. The area must then be reseeded and the vegetation would need to grow back before the swale can become fully effective again.

Even though this is a new procedure, tests of the pilot project facility in Oregon have demonstrated its effectiveness to capture storm water pollutants (see attached material). Based on these results and considering the NPDES requirements we are required to follow, the compost storm water filter system should prove to be the most cost-effective alternative to comply with our NPDES permit.

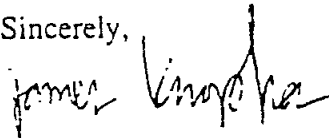


Roger Kao  
Storm Water Treatment  
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I understand that the runoff management plan is being revised at this time. I hope this new option could be considered in certain areas along the route, especially in areas where the available right-of-way is limited, and the distance between interchanges is great. It might be possible to get grant money to implement the compost storm water filter as a demonstration project.

If you would like further information please contact me at 724-2224. I look forward to hearing from you soon.

Sincerely,

A handwritten signature in black ink, appearing to read "James Konopka", written over a horizontal line.

James Konopka  
Associate Environmental Planner

CC: Sylvia Vega. Chief EP, CT  
Charles Larwood. AEP, CT



## MEETING MINUTES

### COMPOST STORMWATER FILTER SAN JOAQUIN HILLS TRANSPORTATION CORRIDOR

PARSONS DE LEUW, INC.

October 28, 1993

#### Attendees:

Robert Holub	SARWQB	909-782-3298
Pavlova Vitale	SARWQB	909-782-4920
Hope Smythe	SARWQB	909-782-4130
Mike Johnson	CCC	714-753-1022
John Shemwell	CCC	714-753-1022
Ted Hromadka	Boyle	714-476-3383
Sandra Bauer	Bauer Services	714-250-5563
Stan Polasik	Parsons De Leuw	714-453-0220

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A meeting was held at the Santa Ana Regional Water Quality Board to discuss the use of Compost Stormwater Filters as the primary BMP on the San Joaquin Hills Transportation Corridor Project.

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ITEM NO.	SUBJECT	ACTION
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Stan Polasik presented the proposed plans for the use of the compost stormwater filter. The compost filter will be used as the primary BMP. The filter is planned to be sized to replace the infiltration component of the Infiltration basin in that has been identified in the RMP. Caltrans had suggested that the Compost filter may significantly reduce the maintenance cost of the BMP. CCC had reviewed the Compost filter and would like to use it on the Corridor.

It has several advantages other than the maintenance cost. The space required for the Infiltration basin was using all the available space within the Corridor R/W and additional land was not available. Several locations required the use of detention basins and oil separators. The compost filter would be used to replace the oil separator component.



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The compost filter is one component in a series of treatment facilities. Runoff would be collected from the pavement by a storm drainage system and discharge into a vegetated detention basin. Plants in the basin would aid in removal of the nutrients that had collected on the pavement. The basin is primarily used to attenuate the peak runoff rate to the relatively low rate of the compost filter. The Compost filter then discharges in to the existing channels or the new wetlands the project is constructing. The existing channels all drain into areas designated as wetlands.

The compost filter does a very good job at removing the pollutants normally associated with highway facilities. However, between storms, the microorganisms found within the compost breakdown the TKN and the Ammonia to form Nitrate. During the first flush and to some extent later, the compost filter releases nitrates at a higher level than seen in the influent. The data provided by W&H Pacific showed this increase to be about 1 to 2 Mg/l at 0.5 Mg/l loading. This is a high percentage increase that is probably not due to the compost itself.

The compost is made from select leaves in a special manner and composted very completely. Using a special drying and packing procedure that will be followed by the corridor, the compost filter will release a maximum of approximately 0.55 Mg/l of TKN. Normal compost under the same test conditions releases 40 to 80 Mg/l of TKN. When a high concentration of nitrates is loaded into new compost, there is no additional nitrate added to the flow. A test using vegetable wash water and new compost showed no nitrates added to the treated water.

Maintenance cost for the facility is approximately 25% of the cost of the infiltration basin with the largest cost resulting from replacement of the sand in the basin. The compost filter is relatively small which can be modified with either improved compost or different filter media should the water quality testing program prove that the water is not being sufficiently treated. W & H Pacific has plans for improving their compost to remove nitrates and phosphorous.



Meeting Minutes  
October 28, 1993

ITEM NO.      SUBJECT

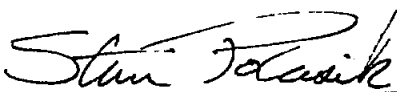
ACTION

The SARWQB will allow the use of the compost filter on this project. They will require that representative basins be tested at the influent and effluent point so they can monitor the improvements in water quality. The board would like the RMP to be amended with the new filter and with a discussion on the treatment requirements of the wet lands. Since the wetlands are only required to remove excess nutrients and will require no maintenance, they did not see a problem in using wetlands as a BMP. They would like to see an estimate of the pollutant loading and the expected removal for the wetlands. The board felt that this work had already been accomplished and was just a manner of documenting it in the RMP.

The San Diego Regional Water Quality Board should also receive this information for them to review. They are aware of the possible use of the compost filter and would like to see the data. They have not deferred their responsibilities on this project to the Santa Ana Regional Water Quality Board.

Meeting concluded at 2:30 p.m.

Any additions, deletions or changes should be directed to Stan Polasik at 714-453-0220.



Stan Polasik, Drainage Manager

cc: J. Barraza, PDI  
J. Lenhart, W&H Pacific  
Doc. Control

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